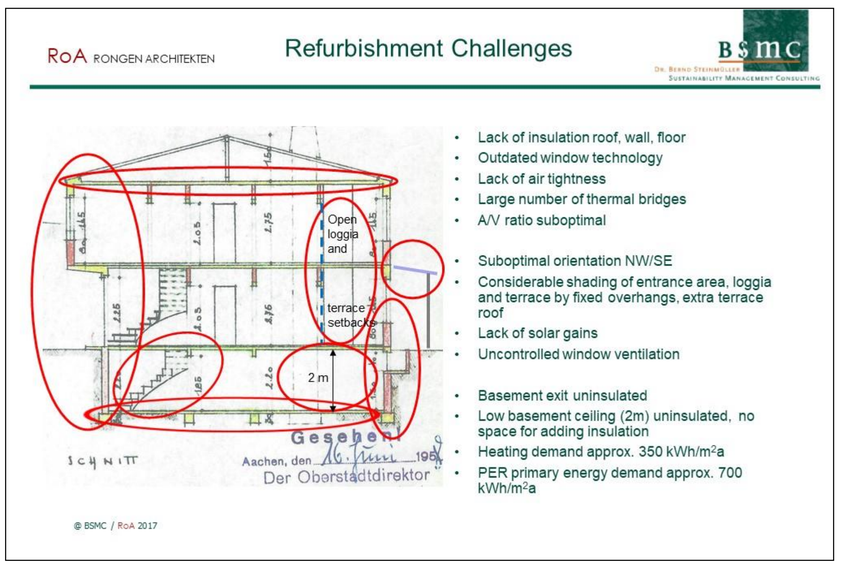

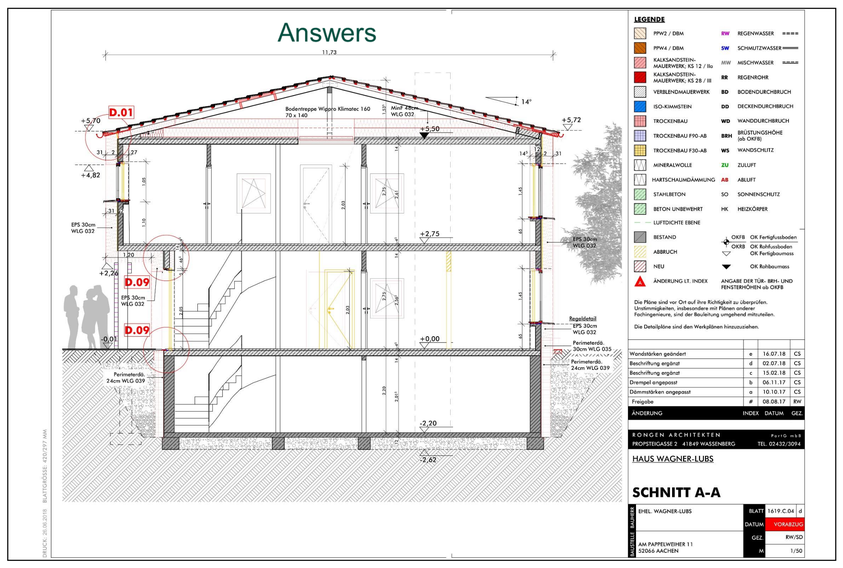

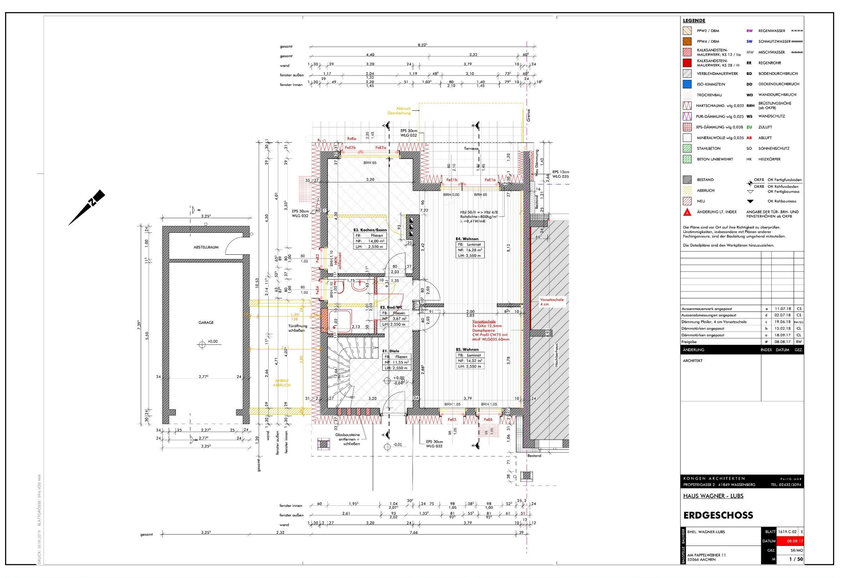

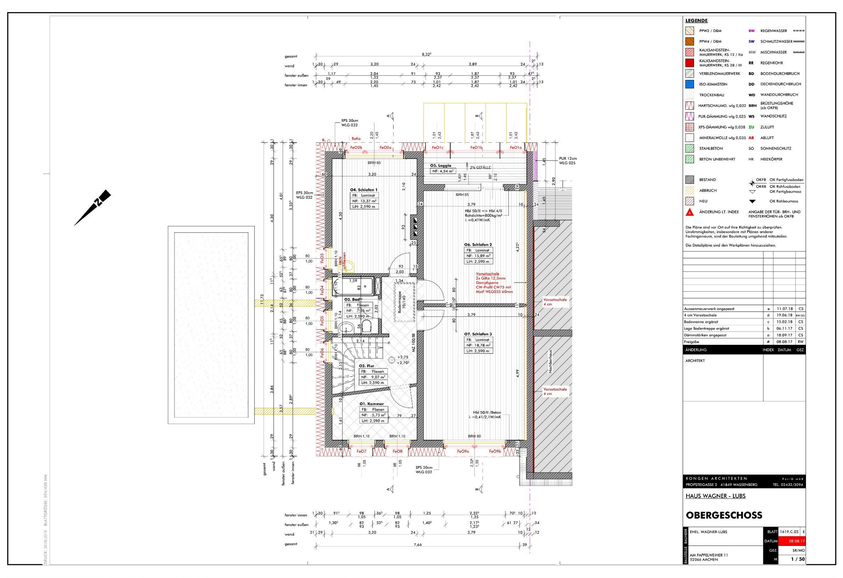

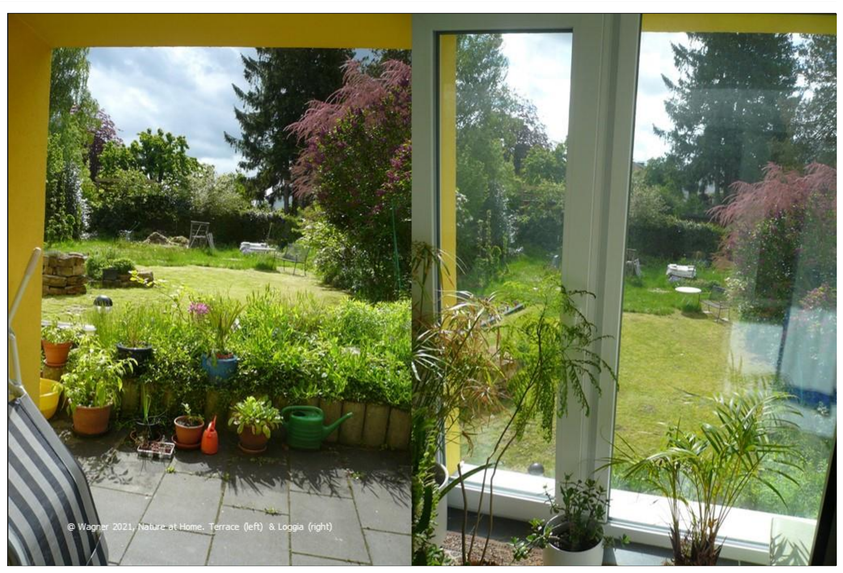

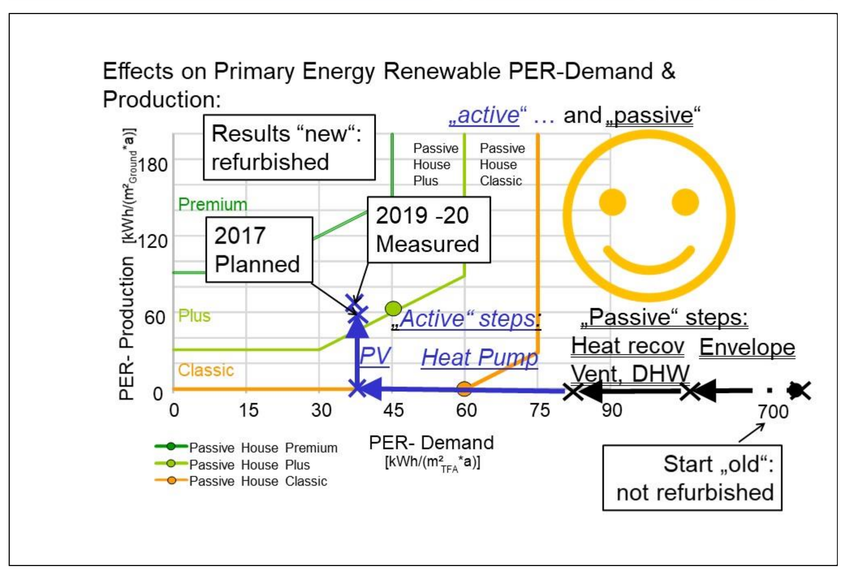

2021 Passive House Award

IG PASSIVHAUS
Informations-Gemeinschaft Passivhaus Deutschland

International PASSIVE HOUSE Association iPHA

Passive House Institute

Titel

60 Year old Settlement Houses - Together Towards Passive House Plus

Index

IBADDO

City, Country	Aachen, NRW, Germany
Climate zone	Cool, temperate
Year of completion	2017/18
Certified as	EnerPHIT House Plus (certified with raw n50: 0,7) & Passive House Plus (prenoted with corrected n50: ≤ 0,6)
Object type	Semi-detached single family dwelling
Treated floor area [m²]	166
Construction	Rafter roof Top floor ceiling: 14cm concrete, retrofitted with 48 cm mineral wool 032 Exterior walls: 1958/59 masonry hollow block construction retrofitted 2017 with 12 - 30cm ETICS 032 Exterior walls basement: concrete hollow block masonry retrofitted with 2x12 cm XPS Floor: 12cm concrete at 220cm depth (only soil insulated)

U-values [W/(m²K)]		
	Exterior wall	0,10
	Roof	0,07
	Ground floor	3,3 without and 0,3 with insulating soil
	Windows	0,74
	Glazing	0,50
	g-value of glazing [%]	53%

Airtightness concept	Airtightness layer interior plaster. Connection to windows and to roof is via plaster able tapes
n_{50}-value [1/h]	0,7 (raw 2018 without supporting pressure in neighbour house) 0,6 (final 2021, prenoted)
Ventilation system	Paul, Focus: cascaded controlled ventilation with a highly efficient central heat recovery unit (91%) using existing shafts, stairs for minimizing duct work, cost, distribution effort
Heating/ cooling/ dehumidification/ domestic hot water	PV-assisted micro heat pump Hautec Carno 5.2 kW, propane, HCS PN 15 with 100m ground probe and 600l heat storage serving both semi-detached houses together (total 367m² energy reference area, max heating load 11 W/m2). The existing radiator system can be efficiently used at a greatly reduced temperature level of 30/35C in both dwellings. Hot water lines partially renewed, shortened.
Renewable energies	PV: 6,3 kWp array on south-east facing slightly tilted roof. Environmental heat: about 10.000 kWh/a or 27 kWh/m2a collected via shared heat pump and ground probe. Rain water
Other Ecological aspects	Reuse of existing building fabric & heat distribution system together with sharing ground heat pump system drastically saves materials, grey energy, emissions - while additional of warm usable space 60m2 is created. The dwelling is a “plus house" in terms of its annual energy balance.

According to PHPP			
	PHPP-version	9.7	
	Heating demand	21	[kWh/(m²a)]
	Heat load	10-11	[W/m²]
	Cooling demand	0	[kWh/(m²a)]
	Cooling load	0	[W/m²]
	Overheating	0	[%]
	PER demand	38	[kWh/(m²a_{TFA})]
	PER production	55	[kWh/(m²a
	PE demand	54	[kWh/(m²a)]

Further notes (e.g. comments on hydrothermal and acoustic comfort)	Together: Triggered by the neighbour‘s project (“Towards… Passive House Plus“, cf. presentation 21st PH conf. Vienna & NRW project of the month) & the Philips Pioneer Project Aachen (passipedia) … committed owners maximize the synergy of shared expert teams & shared Passive House knowledge & shared renewable energies to make Passive Houses Plus possible even in a 60-year-old settlement!